

Mazak

SVC

SERIES

SVC SERIES

Mazak

YAMAZAKI MAZAK CORPORATION

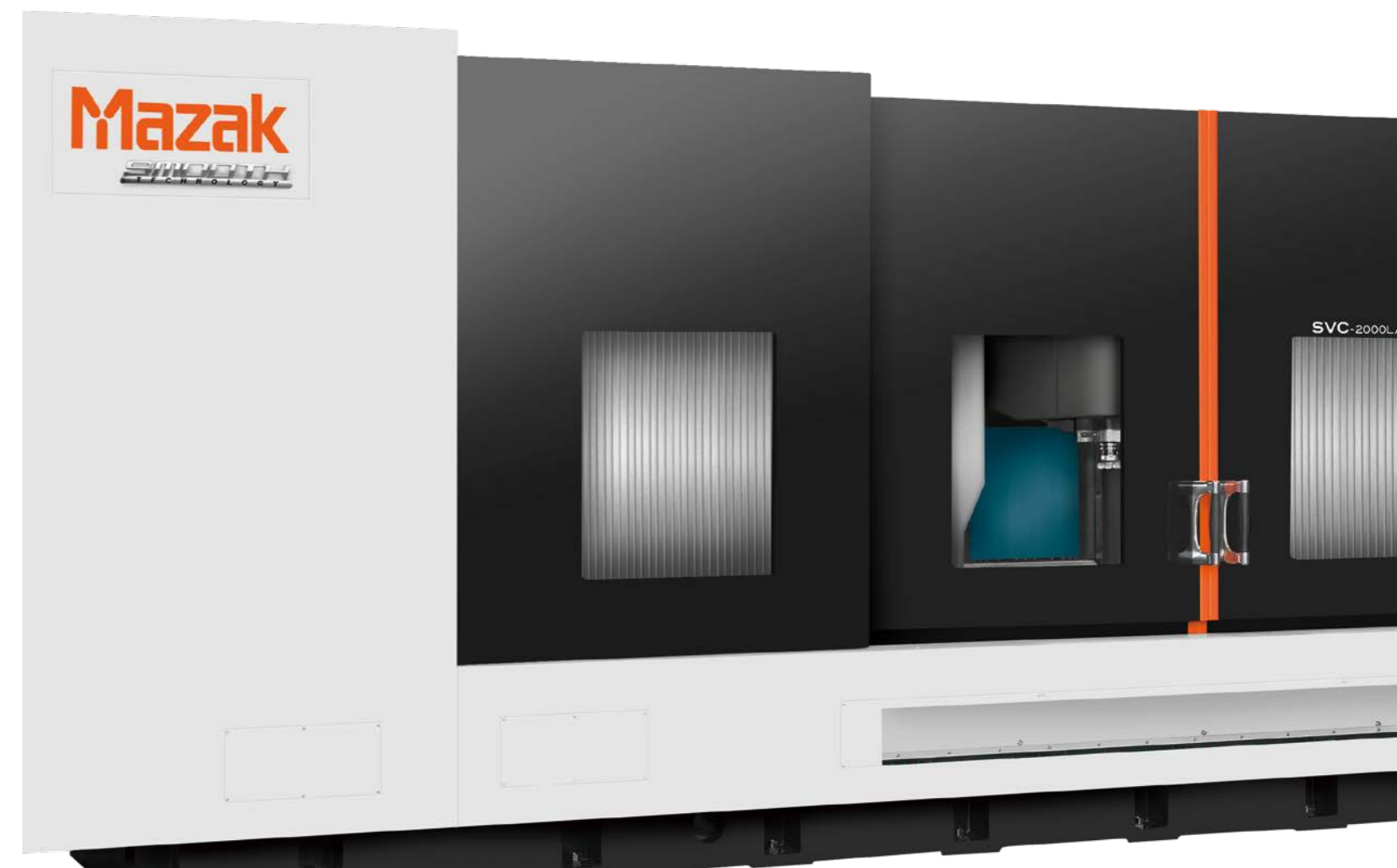
1-131 Takeda, Oguchi-cho, Niwa-gun, Aichi-pref., Japan
TEL : +(81)587-95-1131

www.mazak.com

- Specifications are subject to change without notice.
- This product is subject to all applicable export control laws and regulations.
- The accuracy data and other data presented in this catalogue were obtained under specific conditions. They may not be duplicated under different conditions. (room temperature, workpiece materials, tool material, cutting conditions, etc.)
- Unauthorized copying of this catalogue is prohibited.



SVC SERIES SmoothG 22.09.0 G 99J294322E0



SVC SERIES

High speed feedrate and long table for higher productivity

- Traveling column construction with a fixed table
- Long table provides exceptional versatility, such as long workpiece machining, multiple workpiece setups, 2-pallet changer type operation
- X-axis linear motor provides high speed, high accuracy machining of long workpieces
- Rapid traverse rate 120 m/min (4724 IPM), cutting feedrate 30 m/min (1181 IPM)

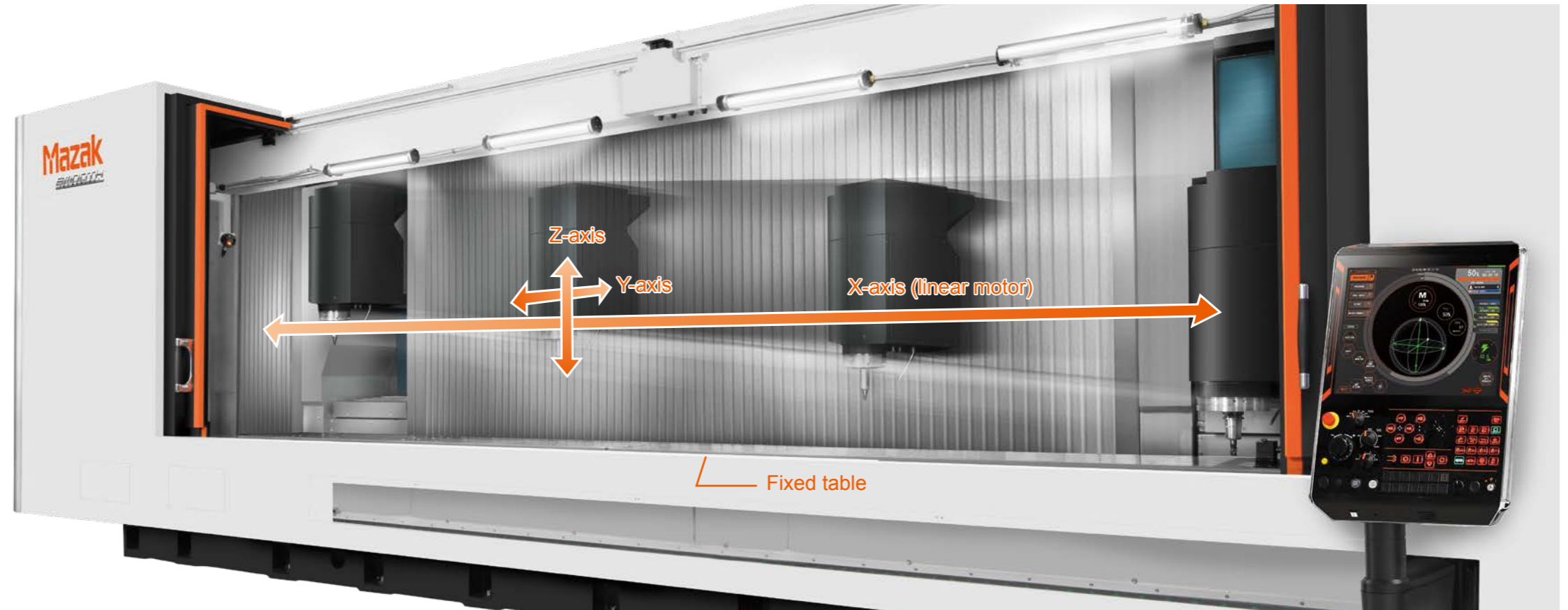


Table size	X-axis rapid traverse rate	Max. cutting speed
3400 mm × 510 mm (133.86" × 20.08") [2000L/120]	120 m/min (4724 IPM)	30 m/min (1181 IPM)
5400 mm × 510 mm (212.6" × 20.08") [2000L/200]	Spindle speed	
	15000 rpm	25000 rpm OPTION
	Spindle output (40% ED / 30 min. rating)	
	22 kW (30 HP)	23 kW (31 HP) OPTION

SVC-2000L/200
Shown with optional equipment

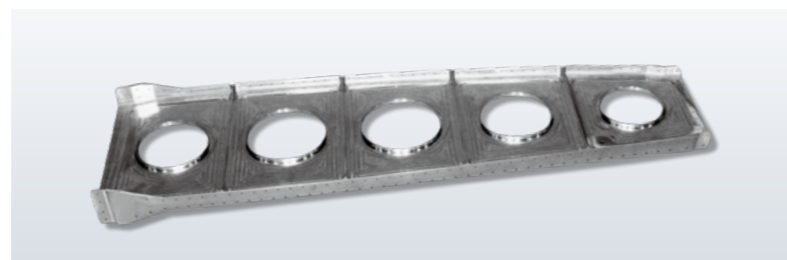
X-axis linear motor provides high speed, high accuracy machining of long workpieces

Thanks to the traveling column construction with a fixed table, long, large workpieces can be easily machined. The X-axis linear motor drive delivers high speed and high productivity machining.



Increased productivity thanks to linear motor

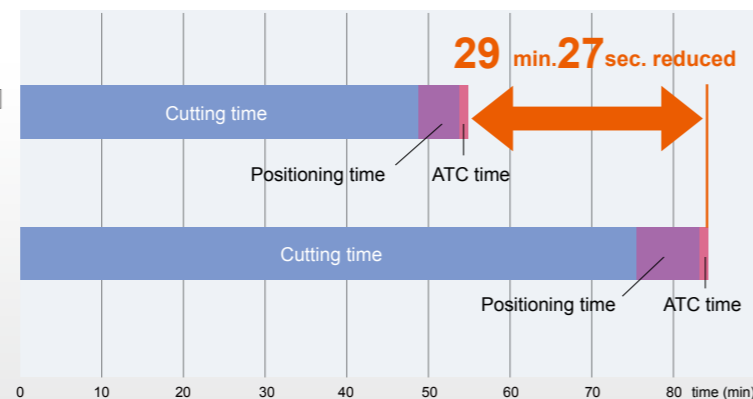
Designed for improved productivity thanks to high speed positioning, high speed feedrate and a high output spindle. Machining cycle time is reduced by 35% when compared to comparable machines.



Workpiece : Aerospace component
Material : A7071
Size : 1500 mm × 500 mm × 61.5 mm (59.06" × 19.69" × 2.42")

SVC-2000L
Max. spindle speed : 15000 rpm
Spindle output (40% ED / 30 min. rating) : 22 kW [30 HP]
Rapid traverse rate (X, Y, Z-axis) : 120 / 50 / 50 m/min (4724 / 1969 / 1969 IPM)

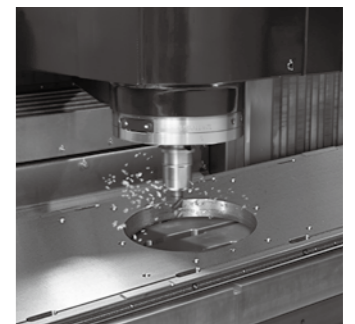
Machining center with ball screws
Max. spindle speed : 10000 rpm
Spindle output (10 min. rating) : 15 kW [20 HP]
Rapid traverse rate (X, Y, Z-axis) : 30 / 30 / 50 m/min (1181 / 1181 / 1969 IPM)



High speed, high output spindle

Designed for high speed machining of non-ferrous materials

Spindle speed	15000 rpm	25000 rpm OPTION
Spindle output	40% ED (30 min. rating)	22 kW (30 HP)
	Cont. rating	15 kW (20 HP)
Torque (40% ED / 30 min. rating)	70.7 N·m (52 ft·lbs)	22.0 N·m (16 ft·lbs)
Spindle taper	7/24 taper No.40	HSK-A63
Spindle acceleration to top speed	1.15 sec. (0→15000 rpm)	2.23 sec. (0→25000 rpm)



High speed tool change, chip-to-chip time : 4.0 sec.

The cam-driven automatic tool changer ensures reliable high speed tool changes over a long service life.

Tool shank	No. 40
Max. tool diameter	Φ80 mm (Φ3.15")
Max. tool dia (with adjacent tool pockets empty)	Φ110 mm (Φ4.33")
Max. tool length (from gauge line)	350 mm (13.78")
Max. tool weight	8 kg (18 lbs)



Higher Productivity

Long table provides exceptional versatility

Large, long workpieces can be machined - even those that overhang the large stationary table.

Large, long workpiece



Multiple parts from one piece of material



Workpiece overhanging the table



Multiple parts setup



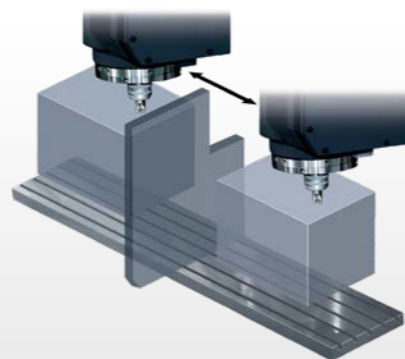
2-pallet changer type operation



Center partition

Center partition OPTION

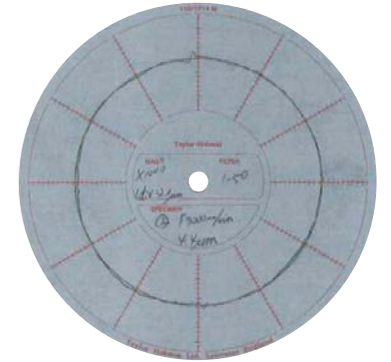
The optional center partition allows the SVC series to be used as two separate machines. Setups can be performed as well as workpiece loading / unloading on one side while machining is being performed on the other.



Roundness

Result: **3.6 μm (0.00014")** Feedrate : 560 mm/min (22 IPM)

Cutting conditions
 Tool : Endmill ($\Phi 20$ mm (0.79") carbide tool with two teeth)
 Cutting speed : $V=628$ m/min (25 IPM) (10000 rpm)
 Feedrate : $F=560$ mm/min (22 IPM) [0.028 mm (0.0011") / tooth]



Result: **4.4 μm (0.00017")** Feedrate : 3000 mm/min (118 IPM)

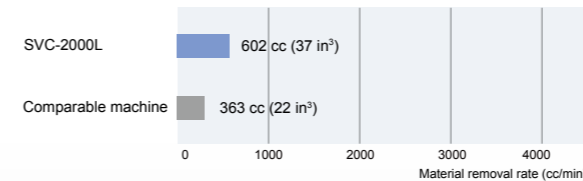
Cutting conditions
 Tool : Endmill ($\Phi 20$ mm (0.79") carbide tool with two teeth)
 Cutting speed : $V=628$ m/min (25 IPM) (10000 rpm)
 Feedrate : $F=3000$ mm/min (118 IPM) [0.15 mm (0.0059") / tooth]



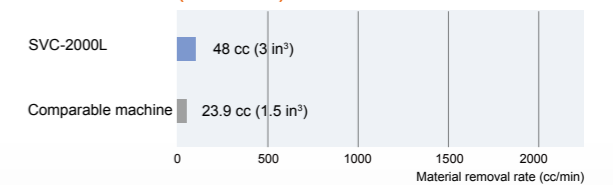
The inspection is conducted according to ISO-230 on a recommended foundation with room temperature controlled to $22^{\circ}\text{C} \pm 1^{\circ}\text{C}$ after machine has reached operation temperature.

Machining capability comparison

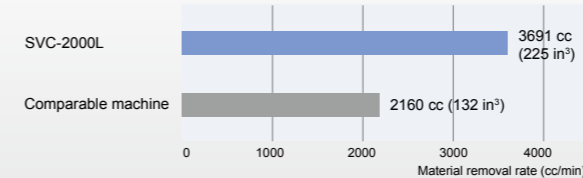
Milling (C45)
602 cc/min (37 in³/min)



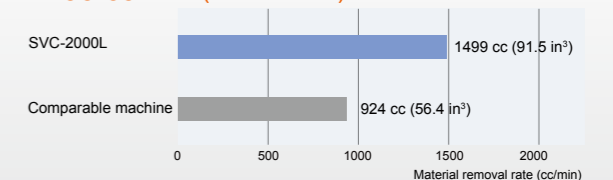
Endmill groove machining (C45)
48 cc/min (3 in³/min)



Milling (aluminum)
3691 cc/min (225 in³/min)



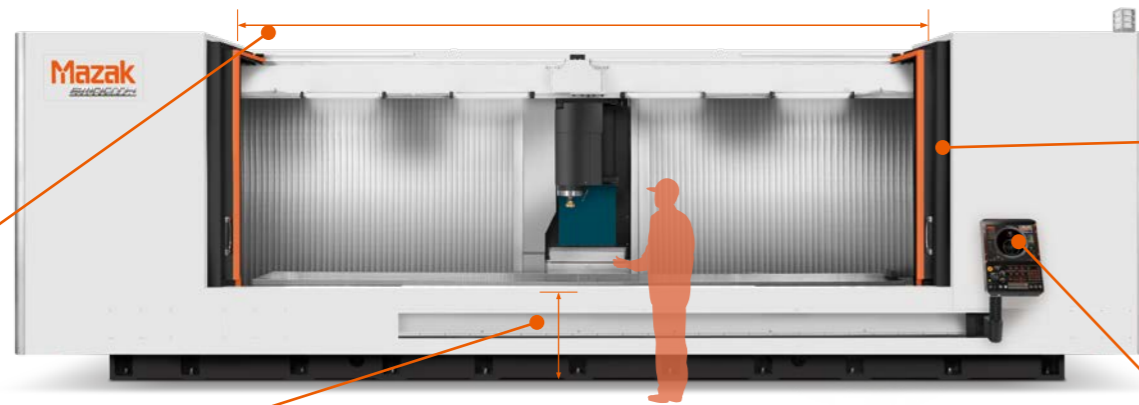
Endmill groove machining (aluminum)
1499 cc/min (91.5 in³/min)



Designed for convenient operation

Excellent operator accessibility

The machine construction with fixed table and traveling column construction features excellent operator accessibility for convenient setup.



Large windows

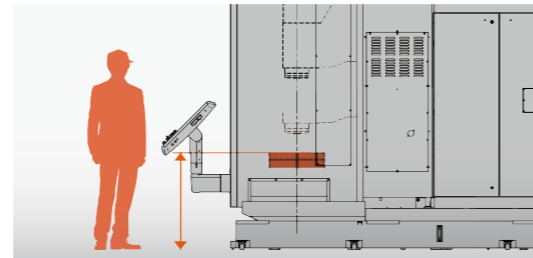
The large front door windows allow workpiece machining to be easily monitored by the operator.



Excellent accessibility to table

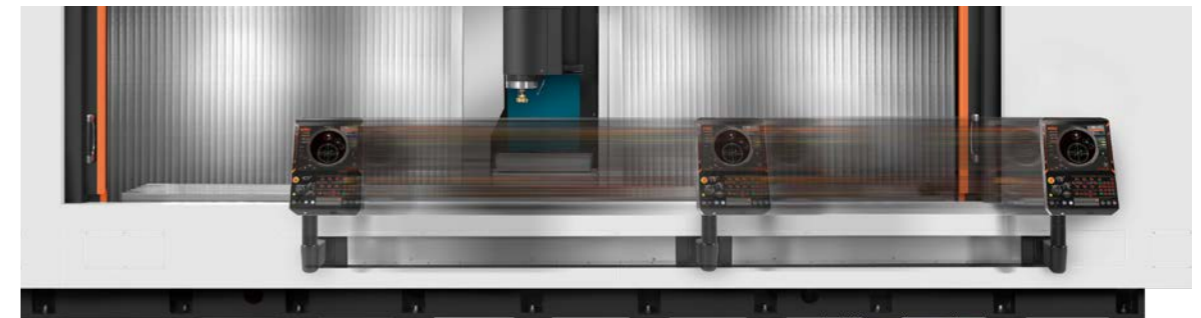
The operator has excellent access to the table from the front of the machine for convenient workpiece loading / unloading and machine setup.

Table top height | 800 mm (31.5") [120] / 890 mm (35.04") [200]



Movable CNC operation panel

For ease of operation during setup and automatic operation.



Wide door opening and convenient access for overhead crane

For ease of operation when loading / unloading workpieces when using overhead crane.

Door opening | 3401 mm (133.9") [120] / 5402 mm (212.68") [200]



MAZATROL SMOOTHG

Movable, adjustable CNC touch panel

Operation touch panel can be tilted to the optimum position for any operator's height to ensure ease of operation.



MAZATROL CNC system
- the core of Smooth Technology

MAZATROL *SMOOTHG*

From setup to machining
- designed for unsurpassed ease of operation



19" touch panel

Touch panel operation
-similar to your smartphone or tablet

USB port

Interface for peripheral equipment
USB-1.0 + 2.0

SD card slot

Transfer program and tool data

Operation switches

Large switches
- color changes from orange to green when turned on

Dials

For frequently-used axis selection and feedrate changes

Process home screens

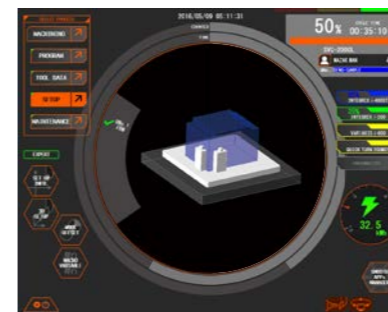
Five different home process screens — each home screen displays the appropriate data in an easy-to-understand manner. Icons can be touched in each process display for additional screen displays.



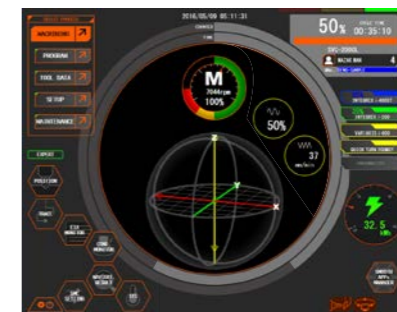
Programming



Tool data



Setup



Machining



Maintenance

Convenient Parameter Setting and Fine Tuning Function

SMOOTH MACHINING CONFIGURATION

Machining features including cycle time, finished surface and machining shape can be adjusted by slider switches on the display according to material requirements and machining methods. This is especially effective for complex workpiece contours defined in small program increments. Once the desired results are obtained, the settings can be stored in memory so that they can be easily used again in the future.



Variable Acceleration Control Function

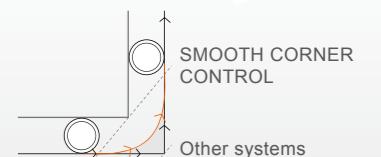
● VARIABLE ACCELERATION CONTROL

Variable acceleration control is a new function which permits the faster acceleration capability of linear axis to be used whenever possible. The slower acceleration of the rotary axis is not used for all program commands, resulting in faster machining cycle times.

Seamless Corner Control

● SMOOTH CORNER CONTROL

Improved finished surfaces and reduced cycle times by optimized acceleration / deceleration when machining corners.



Ease of Programming

Programming screen links tool path, workpiece shape and programming to reduce programming time

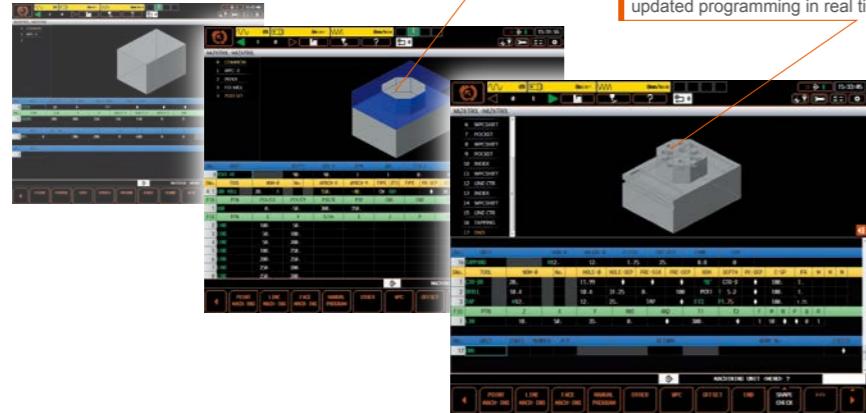
QUICK MAZATROL

[Reduced time for conversational programming]

MAZATROL program, unit list and 3D workpiece shape are linked to each other. After defining a machining unit in a MAZATROL program, the 3D shape is immediately displayed to easily and quickly check for any programming error.

Quickly move to the corresponding section in the MAZATROL program by touching a feature in the 3D model

3D model in the process list is displayed with updated programming in real time



3D ASSIST

[Making a program directly from 3D CAD data]

Workpiece and coordinates data can be imported from 3D CAD data to a MAZATROL program. No coordinate value inputs are required. Can reduce input errors and time for program checking.



QUICK EIA

[EIA program visualization]

Program, process list and 3D tool path display are linked to each other. Visible search on touch screen can reduce the time for program checking.

Selecting tool path by touching the screen

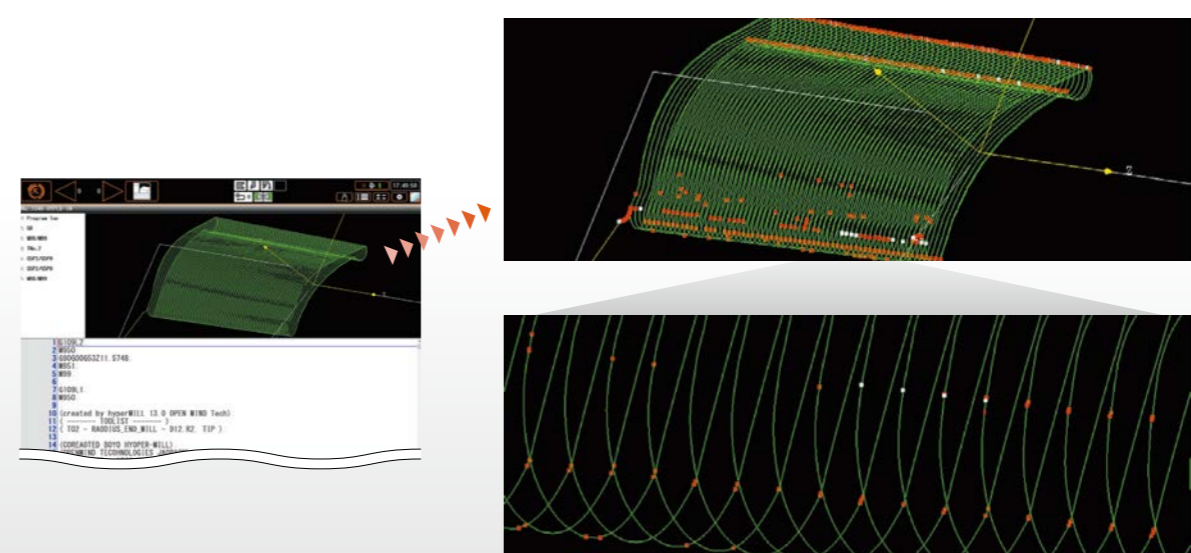
Moving to the corresponding EIA program line



VIEW SURF

[Analyzing EIA programs]

By analyzing tool path, any predictable failure on the finished surface can be visualized. Program modification can be done before machining to minimize the time for test cutting.





Designed with environmental considerations

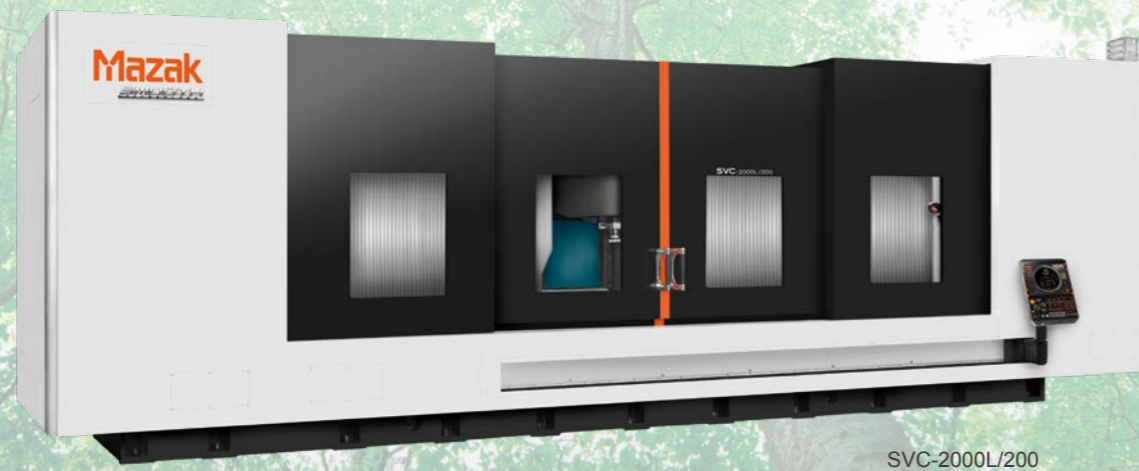
The environment and our impact on our natural surroundings have always been important concerns of Yamazaki Mazak. This is shown by the fact that all factories in Japan where Mazak machine tools are produced are ISO 14001 certified, an international standard confirming that the operation of our production facilities does not adversely affect air, water or land.

Reduction of lubricant consumption

The roller guides and ball screws are lubricated by a grease lubrication system instead of oil. With this system, tramp oil in the coolant is considerably reduced, resulting in a longer coolant service life.

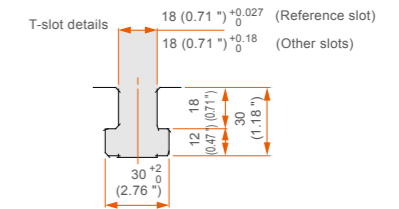
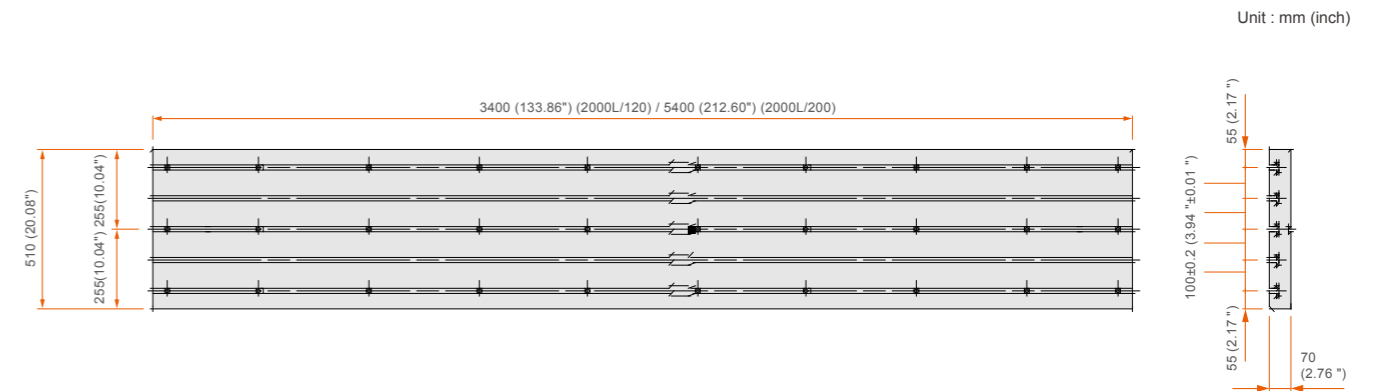
Reduction of electrical power consumption

Power consumption is reduced when the machine is in the stand-by state by automatically turning off the worklights and the optional chip conveyor.



SVC-2000L/200

Table Dimensions

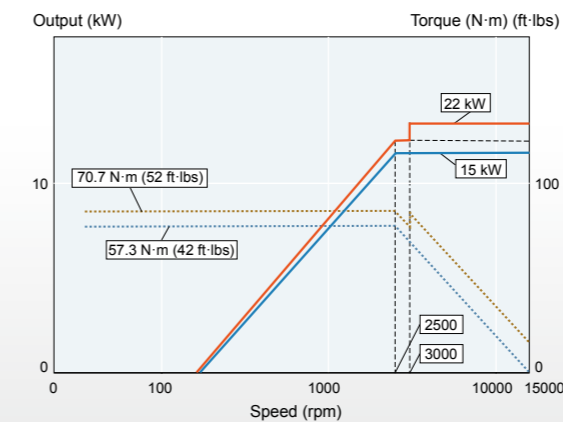


Spindle output / torque diagrams

15000 rpm spindle

Output	Torque
AC 22 kW (30 HP) (40% ED) (30 min. rating)	70.7 N·m (52 ft·lbs) (40% ED) (30 min. rating)
	57.3 N·m (42 ft·lbs) (cont. rating)

— Output (40% ED) (30 min. rating) - - - Torque (40% ED) (30 min. rating)
 — Output (cont. rating) - - - Torque (cont. rating)

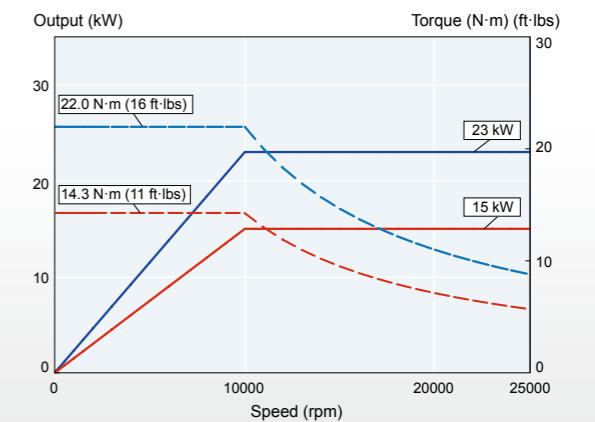


25000 rpm spindle

OPTION

Output	Torque
AC 23 kW (31 HP) (40% ED) (30 min. rating)	22.0 N·m (16 ft·lbs) (40% ED) (30 min. rating)
	14.3 N·m (11 ft·lbs) (cont. rating)

— Output (40% ED) (30 min. rating) - - - Torque (40% ED) (30 min. rating)
 — Output (cont. rating) - - - Torque (cont. rating)



Standard Machine Specifications

		2000L/120	2000L/200
Travel	X-axis (saddle left / right)	3048 mm (120.0")	5080 mm (200.0")
	Y-axis (column up / down)	510 mm (20.08")	
	Z-axis (spindle head up / down)	510 mm (20.08")	
	Distance from table top to spindle nose	180 ~ 690 mm (7.09 ~ 27.17")	
	Effective width between columns	510 mm (20.08")	
Table	Table size	3400 mm × 510 mm (133.86" × 20.08")	5400 mm × 510 mm (212.60" × 20.08")
	Table load capacity (evenly distributed)	2400 kg (5291 lbs)	3400 kg (7496 lbs)
	Table top surface	18 mm (0.71") T-slot × 5, 100 mm (3.94") (pitch)	
Spindle	Speed	50 ~ 15000 rpm	
	Gear ranges	1-Stepless	
	Spindle taper	7/24 taper No. 40	
	Spindle bearing ID	Φ70 mm (Φ2.76")	
	Acceleration time to top speed	1.15 sec. (0→15000 rpm)	
Feedrate	Rapid traverse rate (X / Y-, Z-axis)	120000 mm/min (4724 IPM) / 50000 mm/min (1969 IPM)	
	Cutting feedrate** (X-, Y-, Z-axis)	1 ~ 30000 mm/min (0 ~1181 IPM)	
Automatic tool changer	Tool shank	No. 40	
	Tool storage capacity	30	
	Max. tool diameter / length (from gauge line) / weight	Φ80 mm / 350 mm / 8 kg (Φ3.15" / 13.78" / 18 lbs)	
	Max. tool diameter with adjacent pockets empty	Φ110 mm (Φ4.33")	
	Tool selection method	MAZATROL random memory (random pocket assignment)	
	Tool change time (chip-to-chip)	4.0 sec.	
Motors	Spindle motor (40% ED (30 min. rating) / cont. rating)	AC 22 kW (30 HP) / 15 kW (20 HP)	
	Flood coolant motor	330 W	
Power requirement	Required power capacity (15 min. rating / cont. rating)	75.1 kVA / 65.1 kVA	78.2 kVA / 68.2 kVA
	Air supply (pressure / flow rate)	0.5 MPa (73 PSI) or more / 460 L/min (16.2 ft ³ /min) or more	
Machine size	Height (from floor)	2600 mm (102.36")	2870 mm (112.99")
	Floor space requirement	5985 mm × 3708 mm (235.63" × 145.98")	10460 mm × 4433 mm (411.81" × 174.53")
	Weight (including CNC)	13000 kg (28660 lbs)	26000 kg (57320 lbs)

** Limited feedrate with continuous axis movement

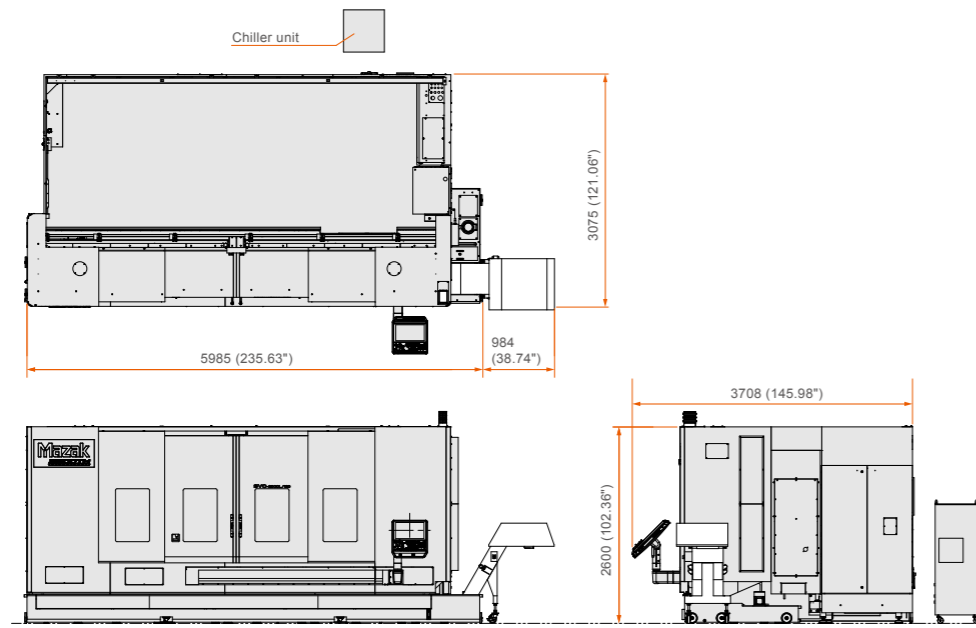
Standard and Optional Equipment

		● : Standard ○ : Option — : N/A	
		SVC-2000L/120	SVC-2000L/200
Machine	Work light (4 locations)	●	●
	15000 rpm spindle (#40)	●	●
	25000 rpm spindle (HSK A-63)	○	○
	Multiple spindle orient (M code / 1°)	○	○
	Big-Plus spindle	○	○
	Ball screw core cooling (Y-, Z-axis)	●	●
	Scale feedback (X-axis)	●	●
	Scale feedback (Y-, Z-axis)	○	○
	Manual pulse generator	○	○
	Foundation kit (dry-pit type)	●	●
Automation	Auto tool length measurement & tool breakage detection	●	●
	Auto tool length measurement 2 set for center partition	○	○
	Automatic front door (with area sensor)	○	○
	Absolute position detection (Y-, Z-axis)	●	●
	Mazak monitoring system B (optical) OMP60	○	○
	Preparation for Mazak monitoring system B / OMP60	○	○
	Hydraulic fixture preparation	○	○
	Pneumatic fixture preparation	○	○
	Fixture seating confirmation 1 port × M code	○	○
	Automatic power ON / OFF + warm-up operation	●	●
	Machining end buzzer	○	○
	Status light (3 colors)	○	○
	Status light (machining end : yellow)	○	○
	Status light (alarm : red)	○	○
Center partition	○	○	
Tool ID magazine operation panel (touch panel)	○	○	
Safety equipment	Operator door interlock	●	●
Coolant	Coolant system	●	●
	Work air blast	○	○
	Oil skimmer (RB-200)	○	○
	Oil hole holder mounting unit (holder not included)	○	○
	Oil mist coolant	○	○
	Coolant temperature control	○	○
	Handheld coolant nozzle	○	○
	Flood coolant 64 PSI, 30 L/min (7.9 gal/min)	○	○
	Air through spindle (available spindle rotation)	○	○
	Coolant through spindle (71 PSI)	○	○
	High pressure coolant through spindle (213 PSI)	○	○
	SUPERFLOW coolant system	○	○
	Mist collector (GP1000) 2 sets	○	—
	Mist collector (GP3000) 2 sets	—	○
	Pressure switch for through-coolant	○	○
	Cover coolant	●	●
Filter equipment (detached)	○	○	
Chip disposal	Internal chip conveyor	—	●
	Chip conveyor (side discharge, hinge / ConSep2)	○	—
	Chip conveyor (rear discharge, hinge / ConSep2)	—	○
	Chip bucket (rotary / fixed)	○	○
Others	Manual	●	●
	Dual monitor for MAZATROL SmoothG CNC	○	○

Machine Dimensions

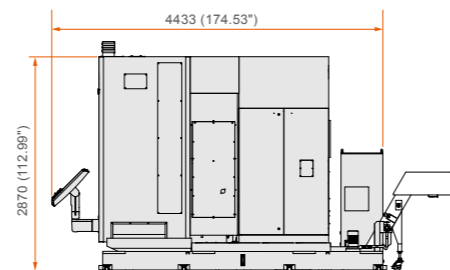
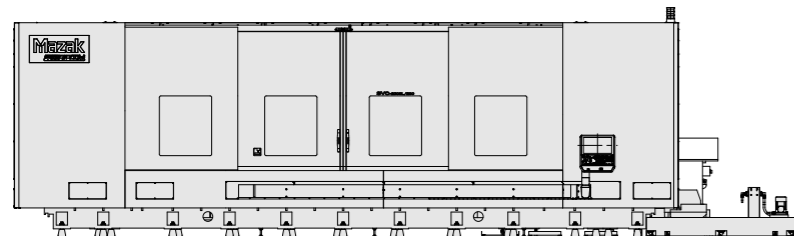
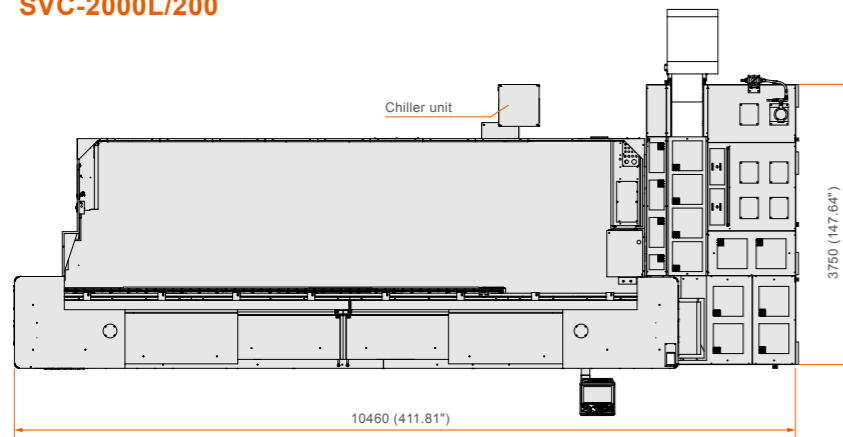
Unit : mm (inch)

SVC-2000L/120



Shown with optional status light and chip conveyor

SVC-2000L/200



Shown with optional status light and chip conveyor

MAZATROL SmoothG Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	
Least input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
High speed, high precision control	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Synchronous tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Variable acceleration control, G0 slope constant*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Time constant changing for G1, Variable acceleration control, G0 slope constant*
Program registration	Number of programs : 256 (Standard) / 960 (Max.), Program memory : 2 MB, Program memory expansion : 8 MB*, Program memory expansion : 32 MB*	
Control display	Display : 19" touch panel, Resolution : SXGA	
Spindle functions	S code output, Spindle speed limitation, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Spindle speed range setting	
Tool functions	Number of tool offset : 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Number of tool offset : 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)
Miscellaneous functions	M code output, Simultaneous output of multiple M codes	
Tool offset functions	Tool position offset, Tool length offset, Tool diameter / tool nose R offset, Tool wear offset	
Coordinate system	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine functions	—	Tilted working plane**, Shaping function*, Dynamic compensation II*, Tool center point control**, Workpiece positioning error compensation**,**
Machine compensation	Backlash compensation, Pitch error compensation, Ai Thermal shield	
Protection functions	Emergency stop, Interlock, Pre-move Stroke Check, SAFETY SHIELD (manual mode), SAFETY SHIELD (automatic mode)*, VOICE ADVISER	
Automatic operation mode	Memory operation	Memory operation, Tape operation, MDI operation, EtherNet operation*
Automatic operation control	Optional stop, Dry run, Manual handle interruption, MD interruption, TPS, Restart, Single process, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MD interruption, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual measuring functions	Tool length teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine	Tool length teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, Measurement on machine
Automatic measuring functions	WPC coordinate measurement, Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*	Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*
MDI measurement	Semi automatic tool length measurement, Full automatic tool length measurement, Coordinate measurement	
Interface	PROFIBUS-DP*, EtherNet/IP*, CC-Link*, CC-Link IE Field Basic	
Card interface	SD card interface, USB	
EtherNet	10M / 100M / 1Gbps	
Security function	Security software*	

*Option

**Simultaneous 4-axis control